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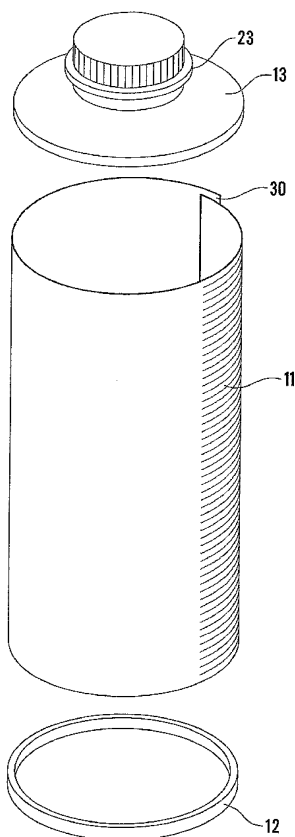
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(54) Title: CONTAINER, METHOD AND APPARATUS



(57) Abstract: A container comprises a lateral portion (11) of plastics coated paperboard, a bottom portion (12) of plastics and a top portion (13) of plastics, the top portion (13) being sealingly attached to the lateral portion (11) along an edge thereof and including a substantially cylindrical neck (21) and an annular rib (23) around the outside surface of the neck (21) and by way of which the container can be supported during mechanical handling thereof, whereby the container can be mechanically handled in the same manner as a conventional plastics bottle.

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CONTAINER, METHOD AND APPARATUS

The present invention relates to containers, a method of forming containers and an apparatus and method for forming and filling the same.

5       US-A-4,527,699 discloses a container for liquid, which comprises a cylindrical trunk member of rectangular cross-section having at least an open end and made of a laminated sheet material having a thermally bonding thermoplastics layer on the inner surface thereof, and at least one end  
10 member having an axially extending flange portion having a thermally bonding thermoplastics layer on the outer surface thereof, the flange portion of the end member being adapted to be fitted in the open end of the trunk member and thermally bonded thereto. Progressing from the outside  
15 thereof, the laminated sheet material may consist of: a thermally bonding thermoplastics layer (of, e.g., polyethylene, polypropylene, or polyester)/a paper layer/a thermally bonding thermoplastics layer/a thin metallic layer (of, e.g., aluminium)/a thermally bonding thermoplastics  
20 layer. The trunk member has a longitudinal sealing seam which can be of fin form.

US-A-4,671,452 discloses a container for flowable materials and including a tube formed by a longitudinal sealing seam, along with a bottom and a cover closing the  
25 tube ends. The cover is formed from thermoplastics material injected on the tube, and has a pouring spout. The tube comprises cardboard which is coated with thermoplastics material on at least one side. The bottom is quadrangular and formed from the folded-under tube. The cover and the cross-  
30 section of the pack, at least in the region of the cover, are round. To improve such a container with a handle so that the final consumer enjoys improved handlability and transportability, a portion of the tube wall which adjoins the periphery of the cover is folded onto itself, forming a

handle, and is joined to provide a double-wall surface portion in which a gripping opening is provided. The cover extends over the upper edge of the double-wall surface portion to provide a stiffening web. The longitudinal sealing  
5 seam can be of fin form, with a strip projecting beyond the remainder of the fin, and be folded over, with the strip sealed to that region of the outside surface of the tube at the opposite side of the fin to the projecting strip.

EP-A-893,355 discloses a packaging container for  
10 beverages, in which a closure of thermoplastics is joined by heat sealing at a peripheral edge portion thereof to a flange along an opening edge of a cup-shaped container body made of a paper-base laminate having a thermoplastics layer over a surface thereof. The closure is provided with a spout and a  
15 cap removably attached to the spout. An example of a conveyor for transporting the container has a holder plate formed with container-holding apertures, and positioning pins arranged around each of the holding apertures. The container body is fitted in such holding aperture, with the flange supported by  
20 the inner peripheral portion of the plate defining the aperture.

According to one aspect of the present invention, there is provided a container comprising a lateral portion, a bottom portion and a top portion, the lateral portion  
25 comprising fibrous material, the top portion being sealingly attached to the lateral portion along an edge thereof and including a substantially cylindrical neck and a handling device which is arranged around the outside surface of said neck and by way of which the container can be supported  
30 during mechanical handling thereof.

According to a second aspect of the present invention, there is provided a method comprising providing fibrous material and a pre-formed top portion including a shaped neck with a handling device, shaping the fibrous material in

forming at least a lateral portion for a container, sealingly attaching the top portion to the lateral portion along an edge thereof, and supporting the container by way of said handling device during mechanical handling of the container.

5       According to a third aspect of the present invention, there is provided a system for forming, filling and handling a container, comprising a container-forming station or machine at which an applying and sealing arrangement brings and seals together a pre-formed top portion and an upper edge  
10 of a lateral portion comprised of fibrous material, the top portion including a shaped neck with a handling device, and a filling station or machine at which a filling device fills the container with a product, the system including a supporting device which interacts with the handling device  
15 to support the container during mechanical handling thereof.

Owing to these aspects of the invention, it is possible to produce containers with a greater variety of shapes than is practically possible with conventional fibre-based cartons to be used in, e.g., the dairy industry, which are handled by  
20 holding them laterally, while preserving the ease of logistics and the low environmental impact which are typical of fibre-based containers relative to plastics bottles.

In particular, the handling device can comprise a projecting portion which projects laterally from the neck, and preferably comprises an annular rib. Advantageously, the  
25 handling device is formed integrally with the neck, and the whole top portion is formed by injection moulding of plastics. The neck can have an upper opening closable by a closure, especially a cap, preferably a screw-cap.

30       The lateral portion advantageously comprises a fibre/polymer composite material, in particular a laminate material comprised of a fibrous layer and one or two polymeric surface layers. In addition to the fibrous layer and the one or two polymeric surface layers, the lateral

portion may include a gas barrier layer, such as a metallic layer, for example aluminium foil

5 The mechanical handling may, for example, comprise mechanical handling at a sterilizing station or machine, and/or a filling station or machine, and/or a closure-applying station or machine, and/or a labelling station or machine, at which the container is supported by such supporting device interacting with the handling device.

10 The external shape and dimensions of the neck, including the handling device, are preferably selected from among those which are standard for plastics bottles, so that the supporting devices can be standard and so that handling stations or machines (e.g. for sterilization, filling, closing and labelling) downstream of the final forming  
15 station for the containers can be readily used also for plastics bottles.

The bottom portion of the container can be also be fibre-based, possibly of the same composition as the lateral portion, and either be attached to the lateral portion by  
20 means of welding or bonding methods known per se, or integral with the lateral portion and formed through folding and sealing of the fibre-based material. As an alternative, the bottom portion can be made of plastics and sealingly attached to the lateral portion of the container in a corresponding  
25 manner to the top portion. The bottom portion can be formed with an external recess for receiving an upward projection, such as a pour spout fitment, of an immediately underneath, identical container, so as to permit easy stacking of the containers one upon another. The provision of such a recess  
30 is particularly simple if the bottom portion is a plastics moulding.

Advantageously, the lateral portion of the container comprises a sheet of fibre-based material with two opposed edges sealed together side-by-side along joining areas

provided on the same surface of the two surfaces of the sheet, i.e. in the form of a fin seal, so as to define a fin-form edge zone of the lateral portion.

Owing to this construction, the junction and sealing of the two opposed edges of the sheet to give the lateral portion of the container a tubular shape takes place between the same material components. It is to be noted, in fact, that the fibre-based sheet material conventionally adopted for containers is actually a laminate where the surface which is destined to lie at the inside of the container, and thus in contact with the product therein, is sometimes different from the outer, often printed, surface. Another advantage of the construction of the present character is that there is no need to provide for skiving and hemming of one of the two opposed edges of the sheet of fibre-based material, as is commonly needed in the traditional carton packaging field.

Preferably, but not necessarily, the fin-form edge zone of the lateral portion is folded or curved against a main part of the lateral portion and/or is shaped to define a handle for the container. In this latter case, a cut-out is preferably provided in the fin-form edge zone to facilitate holding of the container by a consumer.

Alternatively, the two opposed edges can be sealed together along joining areas provided on the respective opposite surfaces of the sheet, i.e. in the form of a lap seal, in which case the inner raw edge of the lap seal would preferably be skived and hemmed, or provided with another form of raw edge protection.

As a first possibility, the fibre-based material can be supplied to a form-fill-seal site, for example a dairy, as a roll of continuous sheet material, and the method comprises cutting the sheet material to produce a pre-determined piece to be subsequently shaped and sealed along at least two opposed edges thereof so as to form at least the lateral

portion of the container. As a second possibility, the fibre-based material can be supplied to the form-fill-seal site as a cut-out blank not as yet sealed, but to be formed and then sealed along the two opposed edges thereof, to provide at least the lateral portion of the container. As a third possibility, the fibre-based material can be supplied to a form-fill-seal site as a pre-sealed, flat, tubular blank to provide subsequently at least the lateral portion of the container.

10        These first and second alternatives are particularly advantageous because then the sheet material can be simply and effectively subjected to a sterilization phase before sealing thereof.

15        The individual top (and bottom) portions can readily be sterilized if so desired.

20        According to a fourth aspect of the present invention, there is provided a container comprising a lateral portion, a bottom portion and a top portion, the top portion being sealingly attached to the lateral portion along an edge thereof, and the lateral portion being a sheet with two opposed edges sealed together side-by-side along joining areas provided on the same surface of the two surfaces of the sheet, so as to define a fin-form edge zone of the lateral portion.

25        According to a fifth aspect of the present invention, there is a method comprising providing sheet material and a pre-formed top portion, shaping the sheet material to form at least a lateral portion for a container, sealing said sheet material along at least two opposed edges thereof, so as to form at least said lateral portion and a fin-form edge zone thereof, and sealingly attaching the top portion to the lateral portion along an edge thereof.

Owing to these aspects of the invention, the junction and sealing of the two opposed edges can be between one-and-

the-same component of the sheet (material), whilst edge skiving can be avoided, so promoting better sealing and reducing production steps.

According to a sixth aspect of the present invention,  
5 there is provided a system for forming, filling and handling plastics bottles and containers other than plastics bottles, comprising a container-forming station or machine at which, in forming each of said containers, an applying and sealing arrangement brings and seals together a pre-formed top  
10 portion and an upper edge of a lateral portion, a filling station or machine at which a filling device fills said containers with product, and a plastics-bottle-forming station or machine for forming said plastics bottles, the filling station or machine being selectively feedable with  
15 said plastics bottles or with said containers respectively formed in the plastics-bottle-forming station or machine or the container-forming station or machine.

According to a seventh aspect of the present invention, there is provided a method comprising, in forming containers  
20 which differ from plastics bottles, bringing and sealing together pre-formed, container top portions and upper edges of container lateral portions comprised of sheets, filling said containers with product at a filling station or machine, ceasing filling said containers at said filling station or  
25 machine, and filling said plastics bottles at said filling station or machine.

Owing to these aspects of the invention, it is possible to feed a single filling station or machine (and possibly a single preceding sterilizing station or machine) with,  
30 selectively, either plastics bottles or containers according to an embodiment of the present invention, thus allowing even more flexibility in the packaging of products.

Further characteristics and advantages will become more evident from the following detailed description of preferred

embodiments, with reference to the attached drawings, given by way of example, in which:

Figure 1 is a perspective view from above of a packaging container,

5        Figure 2 is a view corresponding to Figure 1, but exploded, of the packaging container,

Figure 3 is a side elevation of a top portion of the container,

10       Figure 4 is a view corresponding to Figure 1 of a first modified version of the container,

Figure 5 is a perspective view from above of a second modified version of the container,

15       Figure 6 is a fragmentary top plan view of containers according to Figure 1, 4, or 5, brought together to form a compact group,

Figure 7 is a top plan view of a container of Figure 1, 4, or 5, with a turned-back, fin-form seal,

20       Figures 8a and 8b are respective top plan views of a fourth modified version of the container, with a fin-form seal in differing conditions,

Figures 9a and 9b are views corresponding to Figures 8a and 8b, respectively, of a fifth modified version of the container,

25       Figures 10a to 10c are perspective views from above illustrating diagrammatically various alternative shapes of the container,

Figure 11 is a perspective view from above of a sixth modified version of the container, of that shape illustrated in Figure 10c,

30       Figures 12a and 12b are views corresponding to Figures 8a and 8b, respectively, of a seventh modified version of the container,

Figure 13 is a perspective view from above of an eighth modified version of the container,

Figure 14 is a top plan view of containers according to Figure 13, brought together to form a compact group,

5        Figure 15 is a perspective view from above of a ninth modified version of the container,

Figure 16 is a top plan view of containers according to Figure 15, brought together to form a compact group,

10       Figure 17 is a perspective view from above of a tenth modified version of the container,

Figure 18 is a top plan view of containers according to Figure 17, brought together to form a compact group,

Figure 19 is a perspective view of an eleventh modified version of the container,

15       Figure 20 is a top plan view of containers according to Figure 19, brought together to form a compact group,

Figure 21 is a view similar to Figure 1 of a twelfth modified version of the container,

20       Figure 22 is a view similar to Figure 2 of that twelfth modified version,

Figure 23 is a diagram of a system for forming, filling and handling containers,

25       Figure 24 is a schematic perspective view from above of a machine which constitutes a first machine of two machines of the system of Figure 23,

Figure 25 is a diagram of a modified version of the system of Figure 23,

30       Figure 26 is a schematic view of a system for producing and filling selectively containers according to an embodiment of the present invention or per se known plastics bottles,

Figure 27 is a perspective side view of such a per se

known plastics bottle,

Figure 28 is a fragmentary side elevation of such a container according to an embodiment of the present invention being carried by one of a multitude of transporting grippers  
5 of the system of Figure 26, and

Figure 29 is a top plan view of the container and the gripper of Figure 28.

Referring to Figures 1 to 3, a container 10 for products, for example fluid products such as dairy products,  
10 comprises a lateral portion 11, a bottom portion 12 and a top portion 13. The lateral portion 11 is made of a single sheet of laminate material comprised of a fibrous substrate layer, e.g. paperboard, and inner and outer coatings of moisture barrier plastics, e.g. low density polyethylene (LDPE),  
15 possibly with the interposition of an oxygen barrier layer, e.g. aluminium (Al) or ethylene vinyl alcohol (EVOH). The bottom portion 12 and the top portion 13 are tear-drop shaped, injection-moulded plastics components, each comprising respective peripheral flanges 12a and 13a  
20 sealingly attached to respective lower and upper edges 14 and 15 of the lateral portion 11, which assumes a tubular form of a cross-section corresponding to the tear-drop shape of the bottom and top portions 12 and 13. Two opposed edges 16 and 17 of the sheet which forms the lateral portion 11 of the  
25 container 10 are sealingly joined together longitudinally and side-by-side (i.e. not in a lap-form seal but in a fin-form seal), in other words along longitudinal joining areas provided on the same surface 18 of the sheet, that is, the inner surface of the container 10, so as to define a fin-form  
30 edge zone 19 of the lateral portion 11. From the top portion 13 projects a neck 21 of a pour spout device 20, with the neck 21 being externally threaded and providing a pouring spout, which is closed by an internally threaded cap 22. An annular rib 23 projects radially outwardly from the neck 20

at a level below the external threading, the extent of projection from the neck being at least 2mm., preferably between at least 3mm. There should be a clearance beneath the rib 23 of at least 3.5mm. The rib 23 serves as a handling  
5 device whereby the container 10 is supported during mechanical handling thereof. The device 20 is at the opposite side of the top portion 13 from the upper end of the edge 19.

Figure 4 shows a first modified version, in which the container 10 includes a curved, elongate, fin-form edge zone  
10 24 which is shaped in the form of a handle and comprises a cut-out 25 to facilitate holding of the container by a consumer. The version shown in Figure 5 differs from that shown in Figure 4 chiefly in that the fin-form edge zone 24 is rectilinear rather than curved. In both versions, the  
15 inner edge of the zone 24 is a straight line from top to bottom of the lateral portion 11.

Containers of the character described above with reference to Figures 1 to 5 have a good form factor and can be grouped together so as to promote maximum use of storage  
20 space, as illustrated in Figure 6. The fin-form edge zone 19 or 24 of one container can be easily accommodated between the lateral portions 11 of a different pair of containers. In an alternative, as seen in Figure 7, the fin-form edge 19 or 24 of a container 10 can be folded or curved so as to lie  
25 closely to the lateral portion 11 of the container itself. The fin-type edge zone 19 or 24 can also be completely folded so as to lie immediately adjacent the lateral portion 11 of the container, irrespective of whether the container has the general shape shown in Figures 1 to 5 or any other shape  
30 which will be described hereinafter with reference to various other modified versions of the container.

Figures 8a and 8b and 9a and 9b show fourth and fifth modified versions of the container, each having a substantially rectangular, in these cases substantially

square, cross-section. The container of Figures 8a and 8b has a fin-form edge zone 19 provided at a location along one of the flanks 28 of the container and foldable to lie flatly against that flank, as shown in Figure 8b. The container of  
5 Figure 9a has a fin-form edge zone 19 at the adjacent edges of two adjacent flanks 29 and foldable to lie flatly against one of those flanks, as shown in Figure 9b.

The container can be of a wide variety of shapes. For example, Figure 10a shows that it can be of a pyramidal shape  
10 of triangular cross-section, Figure 10b shows that it can be of inverted frusto-conical shape, and Figure 10c shows that it can be of frusto-conical shape, such as shown in detail in Figure 11.

Figure 11 shows a version having a frusto-conical  
15 lateral portion 11 and corresponding circular top and bottom portions 13 and 12 of differing diameters from each other. Of course, when the top and bottom portions 13 and 12 have the same diameter as each other, the container assumes a cylindrical shape, as illustrated in Figures 12a and 12b.  
20 Again, the lateral portion 11 has a fin-form edge zone 19.

Figure 13 shows a version of the container having a substantially constant polygonal cross-section, in this case a regular hexagonal cross-section, so as to promote maximum use of storage space, as shown in Figure 14. This shape can  
25 easily be modified to a different polygonal cross-section by adopting a correspondingly different polygonal shape of the top and bottom portions of the container.

Figure 15 shows a version having a modified rectangular cross-section, with widely rounded corners and inwardly  
30 bulged opposite flanks 32, so as to render it easier for a consumer to grip the container, especially in the case of a high capacity container of large cross-section. The pour spout device 20 is nearer the front of the container than the rear thereof, whilst the recesses 34 provided by the inward

bulges are nearer the rear than the front, so that the positioning of the recesses 34, which respectively receive a consumer's thumb and fingers during holding of the container, and the positioning of the device 20 promote emptying of the container. This cross-section also can be designed so as to achieve a good form factor of the container, thus promoting maximum use of storage space as can be seen by way of example in Figure 16.

Figure 17 shows a version of the container of a shape similar to that of a pocket flask, so as to maximize self-exposure in a shop, with a cross-section which is arcuate with widely rounded edges. These containers can be grouped together by way of example as shown in Figure 18.

Figure 19 shows a version of the container which has a substantially triangular cross-section, with a front flank 36 which is preferably, but not necessarily, arcuate, and two straighter flanks 38 which merge into the fin-form seal 19. Grouping of these containers in a rectangular box 40 can be effected as shown in Figure 20.

Figures 21 and 22 show a version which differs from the version of Figures 12a and 12b in that the portion 11 is longitudinally sealed as a lap seal 30.

A preferred method of manufacturing the containers described above and which is illustrated by the diagram of Figure 23, is that of providing (as indicated at 42) at a container-forming site pre-moulded plastics top portions 13 and, optionally, pre-moulded plastics bottom portions 12 which may match the top portions 13 according to the shape of container to be manufactured. As an alternative, with some simpler shapes of the containers described above, for example those having a square cross-section, the bottom portion 12 of each container can be formed by folding and sealing a bottom extension of the sheet material used for the lateral portion 11, as per se known in the art of carton forming. Another

possibility is that of providing a separate fibrous-substrate-containing bottom portion 12 to be sealingly attached to the lateral portion 11, for example by thermowelding or any other suitable technique known per se.

5           The sheet which is used to form the lateral portion 11 of each container preferably comes from a web of material drawn from a roll (as indicated at 44) of sheet material, which web is then cut (as indicated at 46) into sheets of predetermined shape. Preferably, the sheet material is pre-  
10   printed on that of its surfaces which is destined to be the outside of the container. These sheets, as well as the premoulded plastics top portions and, when provided, bottom portions, undergo sterilization (as indicated at 48) before the actual forming and sealing of the lateral portion to the  
15   top portion and, when provided, bottom portion of each container are effected (as indicated at 50). The form and seal section indicated at 50 can be of modular construction, so as to permit quick change-over to different shapes and/or dimensions of the portions 11 to 13. The finished container  
20   can be conveyed (as indicated at 52) to a filling machine (as shown at 54), which may be an Elofill™ Clean Rotary 12000 machine, and to this effect is handled by its neck 21, in particular the rib 23. This external handling ensures that the hygienic conditions reached during the sterilization are  
25   kept at their best level.

          Instead of or in addition to the feed of sheet material from a roll and its subsequent cutting into pieces, longitudinally sealed, flat, tubular blanks (as indicated at  
30   56) may be provided directly to the sterilizing station to be subsequently formed into containers by sealingly attaching at least the top pre-moulded portions 13 thereto.

          The procedure according to items 44 to 52 and 56 can be performed by a single machine 58 diagrammatically illustrated in Figure 24.

The embodiment shown in Figure 25 differs from that of Figure 23 chiefly in that sterilization is not performed in the machine 58 but downstream thereof, as indicated at 60; that the lateral portions 11 are longitudinally lap-sealed in the machine 28 and, since they have been supplied in the form of blanks as yet not sealed (as indicated at 62) or as blanks cut (as indicated at 64) from the roll 44, those blanks are given longitudinal raw edge protection and then longitudinally sealed (as indicated at 66) before the open top portions 13 and the bottom portions 12 are sealed to the top and bottom edges of the portions 11 (as indicated at 68 and 70). Following sterilization (60), the containers so produced are filled (as indicated at 72), have their caps 22 applied and then proceed to further handling (as indicated at 74), for example loading into boxes or crates.

In another embodiment of the present method, it is effected by means of an apparatus specifically designed for forming, filling and handling containers, which apparatus comprises a container-forming station for forming the containers, and a filling station for subsequently filling the containers with a product. In the apparatus, a supporting device interacts with the handling device 23 of the container to support the container during the filling and handling operations.

Downstream of the filling station or machine, a labelling station or machine can be provided.

If the forming of the containers and the filling thereof is performed by two distinct machines, the filling machine can be one of a per se known character employed in the field of filling bottles, particularly blow-moulded plastics bottles provided with handling devices similar to the device 23 for their own handling. In this case, illustrated in Figure 20, the filling machine 54 can be fed with either containers 10 according to an embodiment of the present

invention, for example containers 10 according to Figure 11, which are conveyed from the forming machine 58, or with blow-moulded bottles 80 coming from a per se known bottle-forming machine 82, which may be a Kosme blow-moulding machine (or  
5 from a bottle storage depot). In practice, switching from filling a series of containers 10 to filling a series of bottles 12, and vice versa, is useful to maintain the full productivity of the filling machine 54 while, for example, the format of either the bottles 80 or the containers 10 is  
10 changed and/or their respective forming machines 82 and 58 are serviced. Each plastics bottle 80 has, at the external periphery of its neck, a handling device 84 in the form of an annular rib. Extending from the forming machine 58 to a junction 86 is a conveyor section 88 for the containers 10,  
15 whilst there extends from the blow moulding machine 82 to that junction 86 a conveyor section 90 for the bottles 80. A conveyor section 92 for both the containers and the bottles extends from the junction 86 to the filling machine 54, to a carousel 94 of which the containers or the plastics bottles,  
20 as the case may be, are transferred and whence the containers or the plastics bottles, as the case may be, are transferred to an output conveyor section 96 of the system. The conveyor sections 88, 90, 92 and 96 are of identical design to each other. Referring to Figures 28 and 29, those conveyor  
25 sections and the carousel 94 include a multitude of plate-like grippers 98, each for releasably embracing the neck of a container 10 or a bottle 80 so that the handling device 23 or 84 can bear on the upper surface of the gripper. Each gripper supports the container or the bottle (and thus any contents  
30 thereof) and includes a pair of resilient fingers 100 which engage releasably around the neck of the container 10 or the bottle 80.

CLAIMS

1. A container comprising a lateral portion, a bottom portion and a top portion, the lateral portion comprising fibrous material, the top portion being sealingly attached to the lateral portion along an edge thereof and including a substantially cylindrical neck and a handling device which is arranged around the outside surface of said neck and by way of which the container can be supported during mechanical handling thereof.
2. A container according to claim 1, wherein said fibrous material is a substrate layer of said lateral portion, which includes a plastics coating at the interior of said lateral portion.
3. A container according to claim 1 or 2, wherein said top portion is formed of substantially only plastics.
4. A container according to claim 3, wherein said top portion has been formed by injection moulding.
5. A container according to any preceding claim, wherein said handling device comprises an annular rib round said neck.
6. A container according to any preceding claim, wherein said handling device projects by at least 2mm. from said neck.
7. A container according to any preceding claim, wherein there is clearance beneath said handling device of at least 3.5mm.
8. A container according to any preceding claim, wherein said bottom portion comprises fibrous material.
9. A container according to claim 8, wherein said

fibrous material of said bottom portion is a substrate layer and said bottom portion includes a plastics coating.

10. A container according to any preceding claim,  
5 wherein said bottom portion is integral with said lateral portion.
11. A container according to any one of claims 1 to 7,  
wherein said bottom portion is formed of substantially only plastics.
- 10 12. A container according to claim 11, wherein said bottom portion has been formed by injection moulding.
- 15 13. A container according to any preceding claim, wherein said lateral portion is of sheet material with two opposed edges sealed together side-by-side along joining areas provided on the same surface of the two surfaces of the sheet material, so as to define a fin-form edge zone of the lateral portion.
- 20 14. A container according to claim 13, wherein said fin-form edge zone of the lateral portion is folded or curved against a main part of the lateral portion.
- 25 15. A container according to claim 13 or 14, wherein substantially the whole of the inner edge of said fin-form edge zone is on a straight line and wherein said fin-form edge zone is shaped so as to define a handle for the container.
- 30 16. A method comprising providing fibrous material and a pre-formed top portion including a shaped neck with a handling device, shaping the fibrous material in forming at least a lateral portion for a container, sealingly attaching the top portion to the lateral portion along an edge thereof, and supporting the container by way of said handling device during

mechanical handling of the container.

17. A method according to claim 16, wherein said shaping is provided by shaping a pre-sealed blank comprising said fibrous material so as to form at least said lateral portion.
18. A method according to claim 16, wherein the fibrous material is provided from a roll of continuous sheet material, the method comprising cutting from the sheet material a pre-determined sheet, shaping said sheet and sealing said sheet along at least two opposed edges thereof, so as to form at least said lateral portion.
19. A method according to claim 18, and further comprising subjecting said sheet material or said sheet to sterilization before sealing of said sheet.
20. A method according to any one of claims 16 to 19, and further comprising folding said fibrous material in forming a bottom portion of the container.
21. A method according to any one of claims 16 to 19, and further comprising providing a pre-formed bottom portion and sealingly attaching it to the lateral portion along another edge thereof.
22. A system for forming, filling and handling a container, comprising a container-forming station or machine at which an applying and sealing arrangement brings and seals together a pre-formed top portion and an upper edge of a lateral portion comprised of fibrous material, the top portion including a shaped neck with a handling device, and a filling station or machine at which a filling device fills the container with a product, the system including a supporting device which interacts with the handling device to support the container during mechanical

handling thereof.

23. A system according to claim 22, wherein said supporting device serves to support said container at said filling station or machine by way of said handling device.

24. A system according to claim 22 or 23 and further comprising a labelling station or machine where a labelling device provides the container with a label, said supporting device serving to support said container at said labelling station or machine by way of said handling device.

25. A system according to any one of claims 22 to 24 and further comprising a plastics-bottle-forming station or machine, the filling station or machine being selectively feedable with a plastics bottle or said container respectively formed in the plastics-bottle-forming station or machine or the container-forming station or machine, and the supporting device supporting selectively the plastics bottle or the container during handling operations thereof.

26. A container comprising a lateral portion, a bottom portion and a top portion, the top portion being sealingly attached to the lateral portion along an edge thereof, and the lateral portion being a sheet with two opposed edges sealed together side-by-side along joining areas provided on the same surface of the two surfaces of the sheet, so as to define a fin-form edge zone of the lateral portion.

27. A container according to claim 26, wherein substantially the whole of the inner edge of said fin-form edge zone is a straight line and wherein said fin-form edge zone is shaped so as to define a handle for the container.

28. A method comprising providing sheet material and a pre-formed top portion, shaping the sheet material to form at least a lateral portion for a container, sealing said sheet material along at least two opposed edges thereof, so as to form at least said lateral portion and a fin-form edge zone thereof, and sealingly attaching the top portion to the lateral portion along an edge thereof.
29. A system for forming, filling and handling plastics bottles and containers other than plastics bottles, comprising a container-forming station or machine at which, in forming each of said containers, an applying and sealing arrangement brings and seals together a pre-formed top portion and an upper edge of a lateral portion, a filling station or machine at which a filling device fills said containers with product, and a plastics-bottle-forming station or machine for forming said plastics bottles, the filling station or machine being selectively feedable with said plastics bottles or with said containers respectively formed in the plastics-bottle-forming station or machine or the container-forming station or machine.
30. A method comprising, in forming containers which differ from plastics bottles, bringing and sealing together pre-formed, container top portions and upper edges of container lateral portions comprised of sheets, filling said containers with product at a filling station or machine, ceasing filling said containers at said filling station or machine, and filling said plastics bottles at said filling station or machine.
31. A method according to claim 30, wherein the same supporting devices in said filling machine are

employed during filling of said containers to support said containers from necks thereof as are employed during filling of said bottles to support said bottles from necks thereof.

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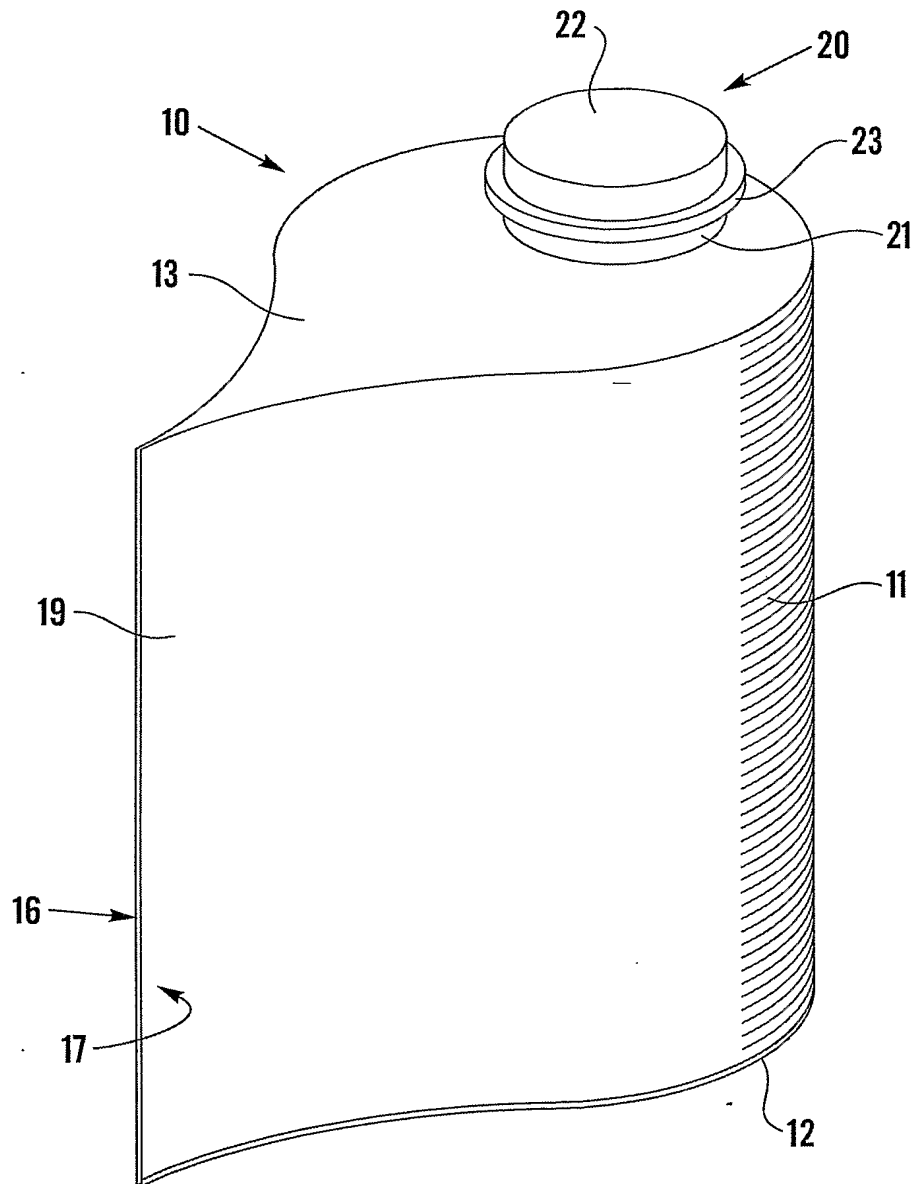


Fig. 1

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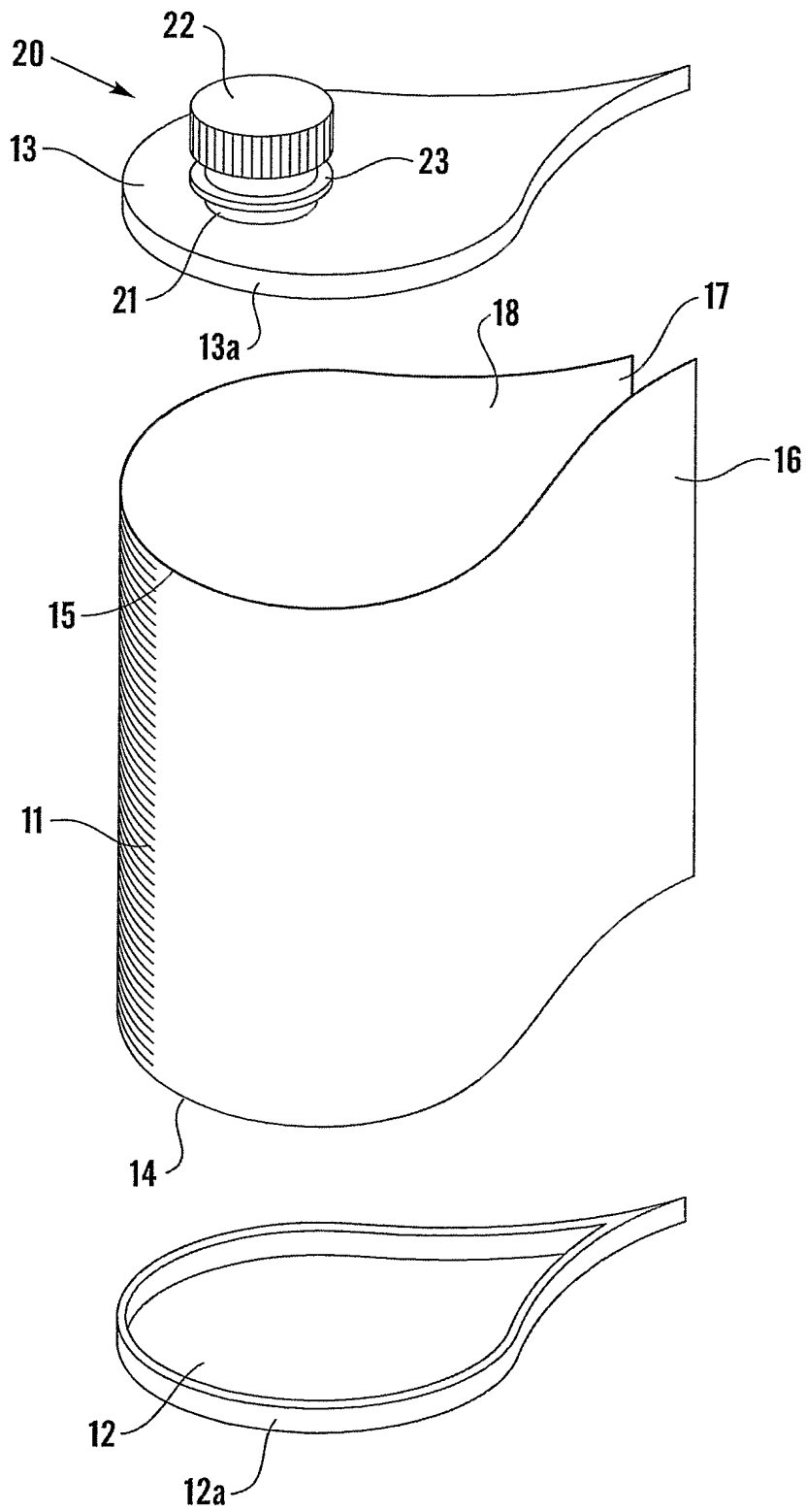


Fig. 2

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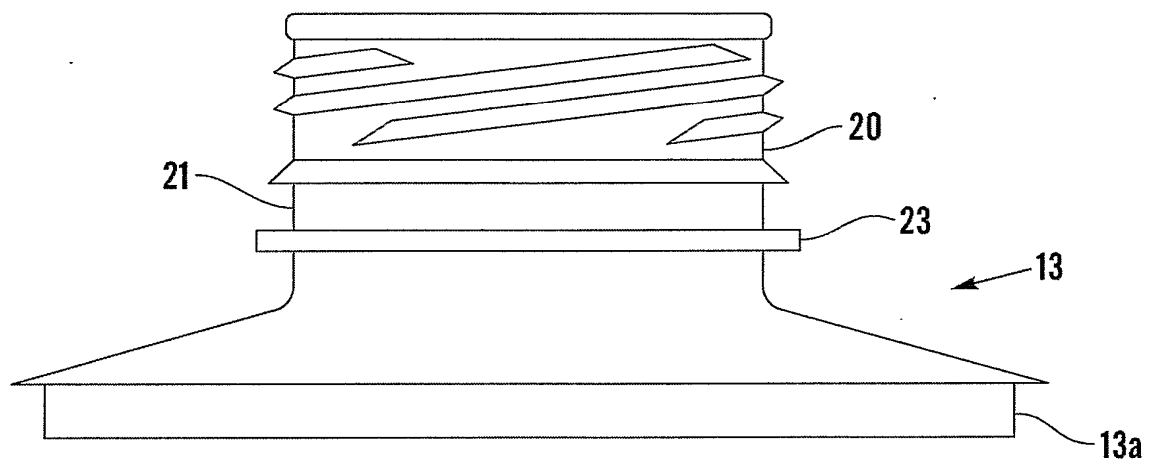


Fig.3

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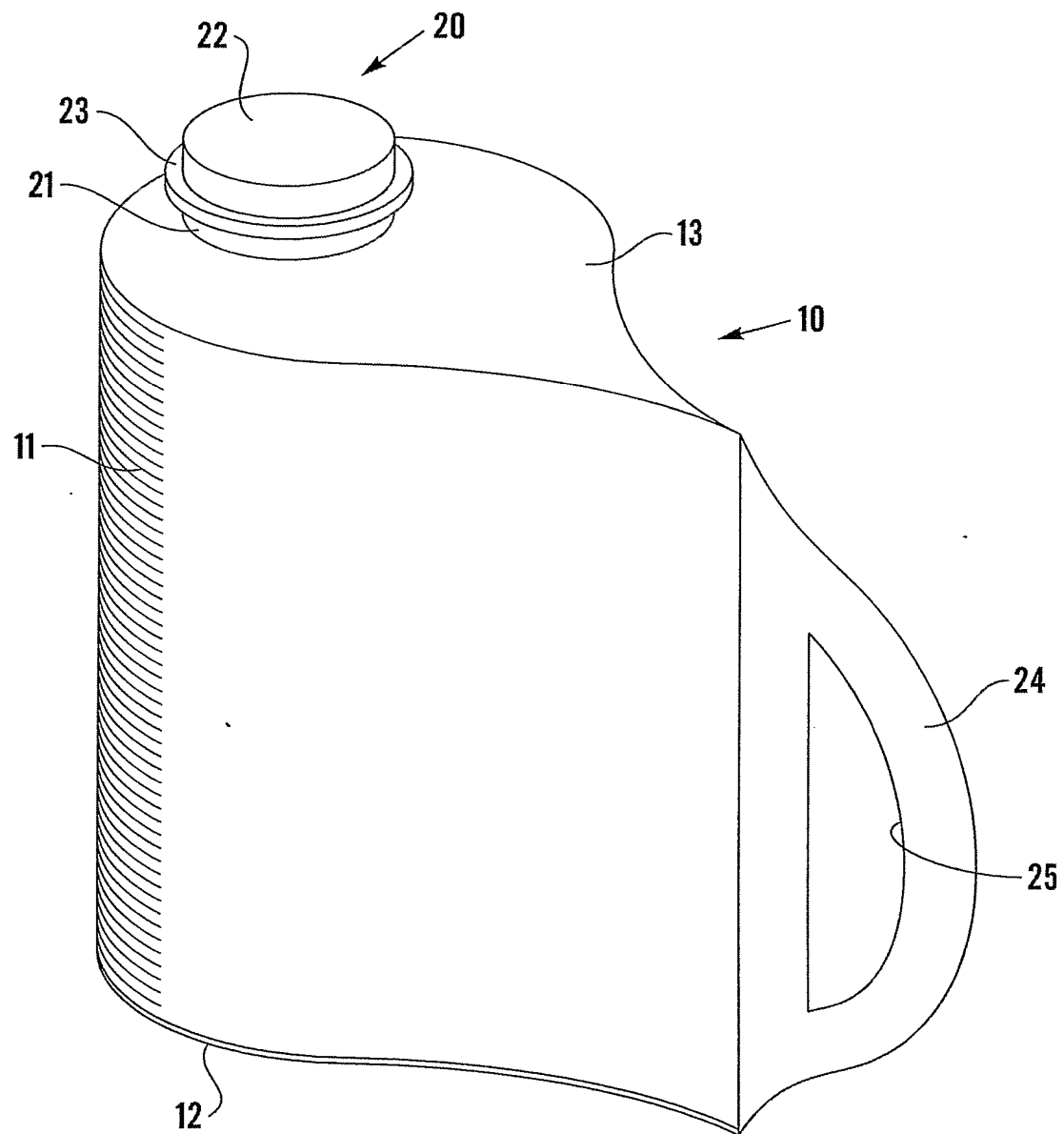


Fig.4

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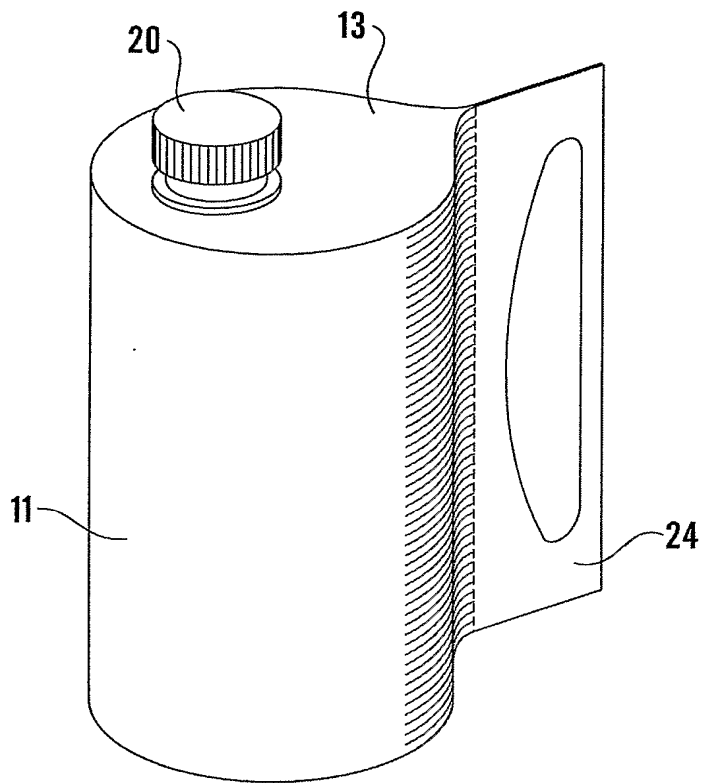


Fig. 5

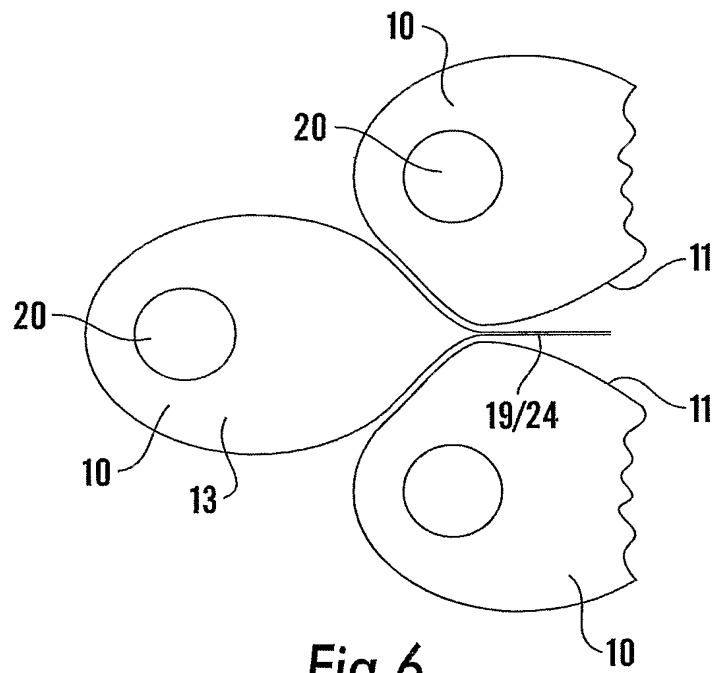


Fig. 6

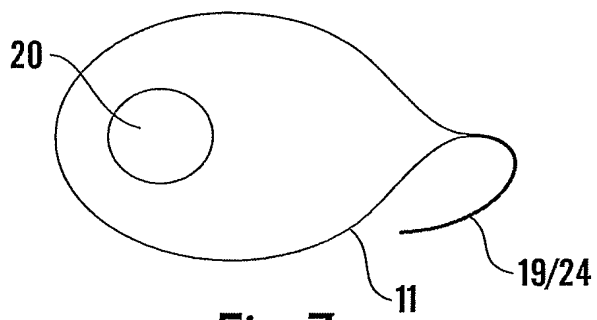


Fig. 7

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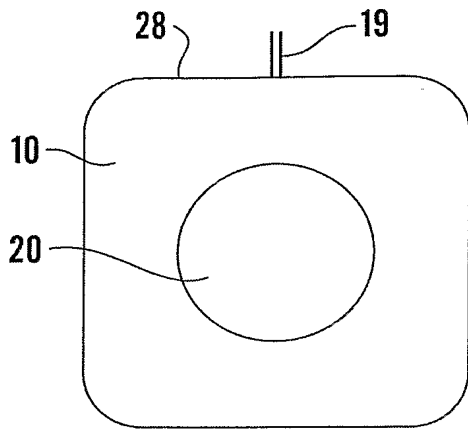


Fig. 8a

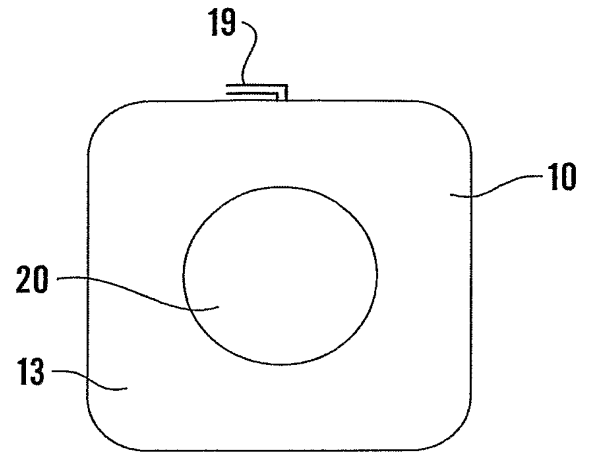


Fig. 8b

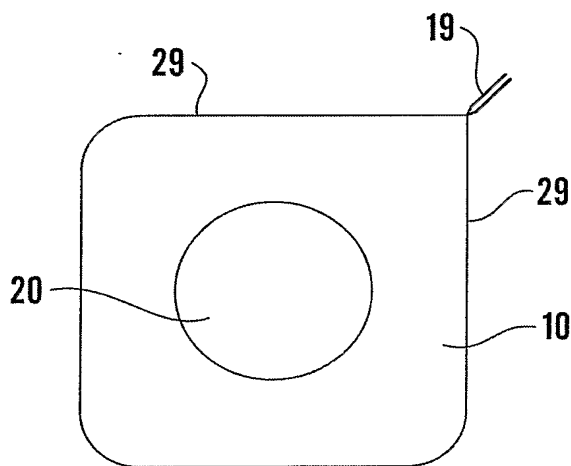


Fig. 9a

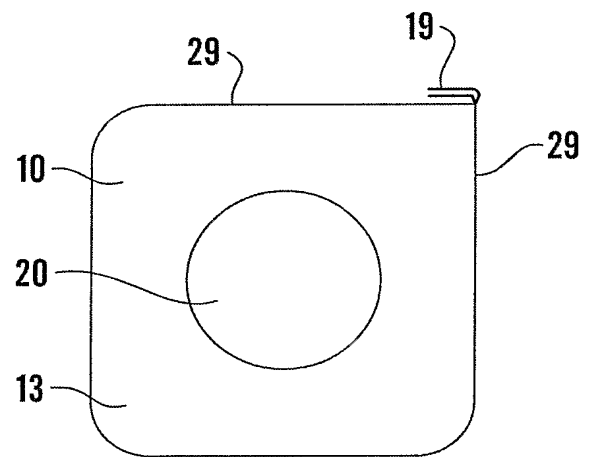


Fig. 9b

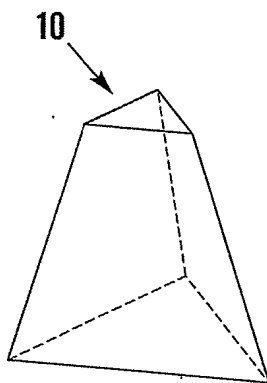


Fig. 10a

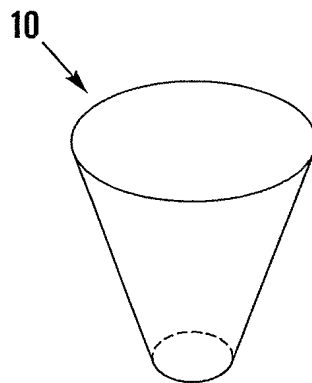


Fig. 10b

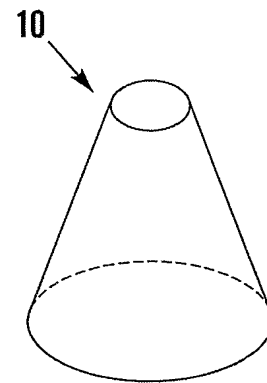


Fig. 10c

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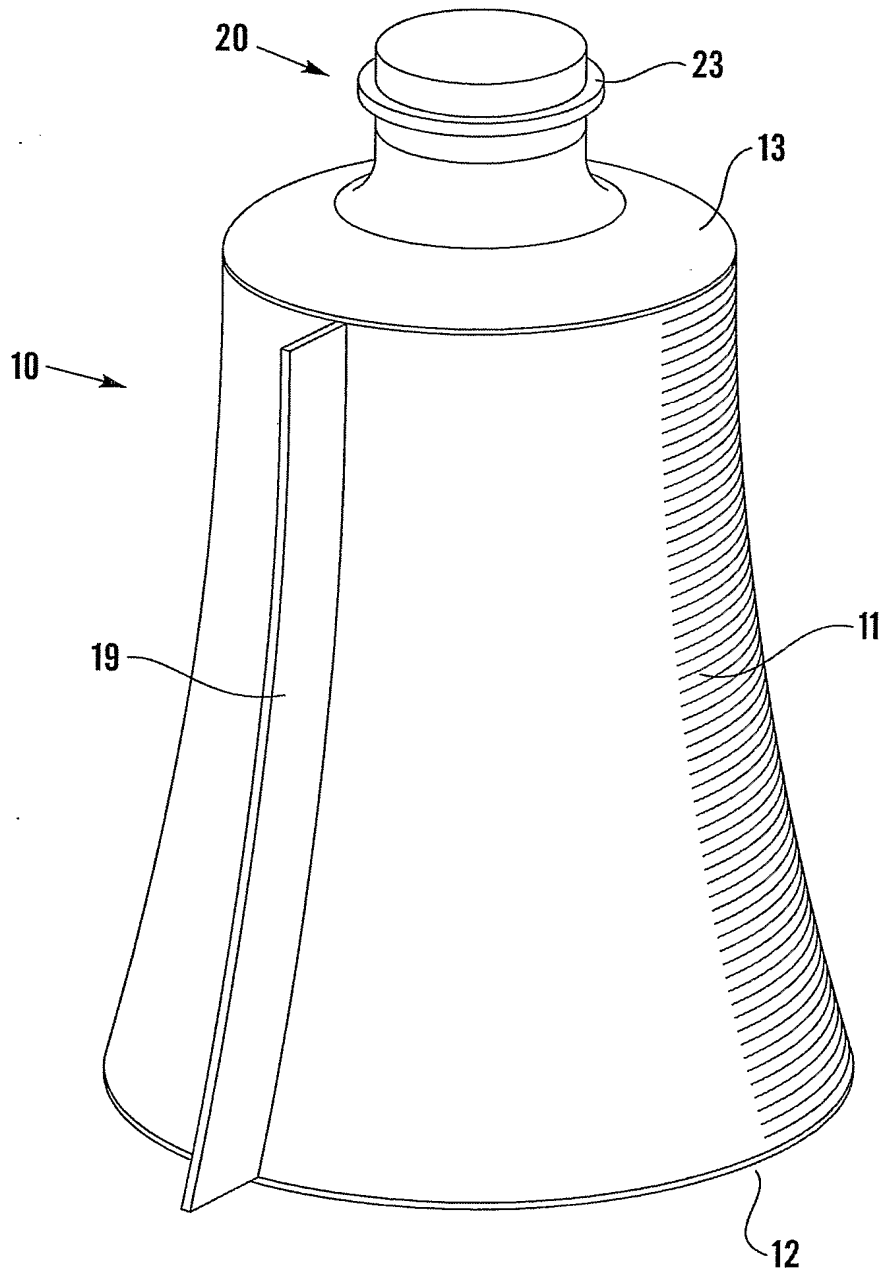


Fig. 11

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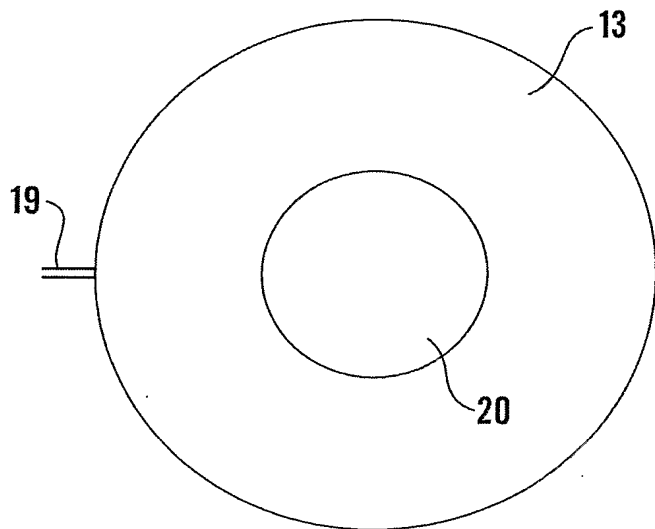


Fig. 12a

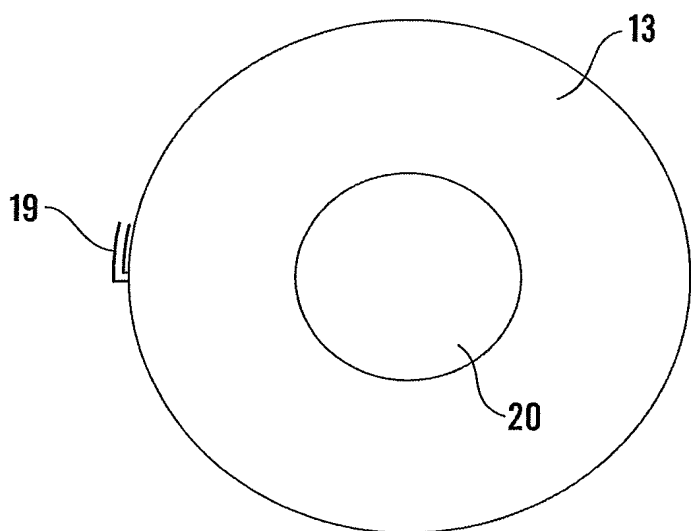


Fig. 12b

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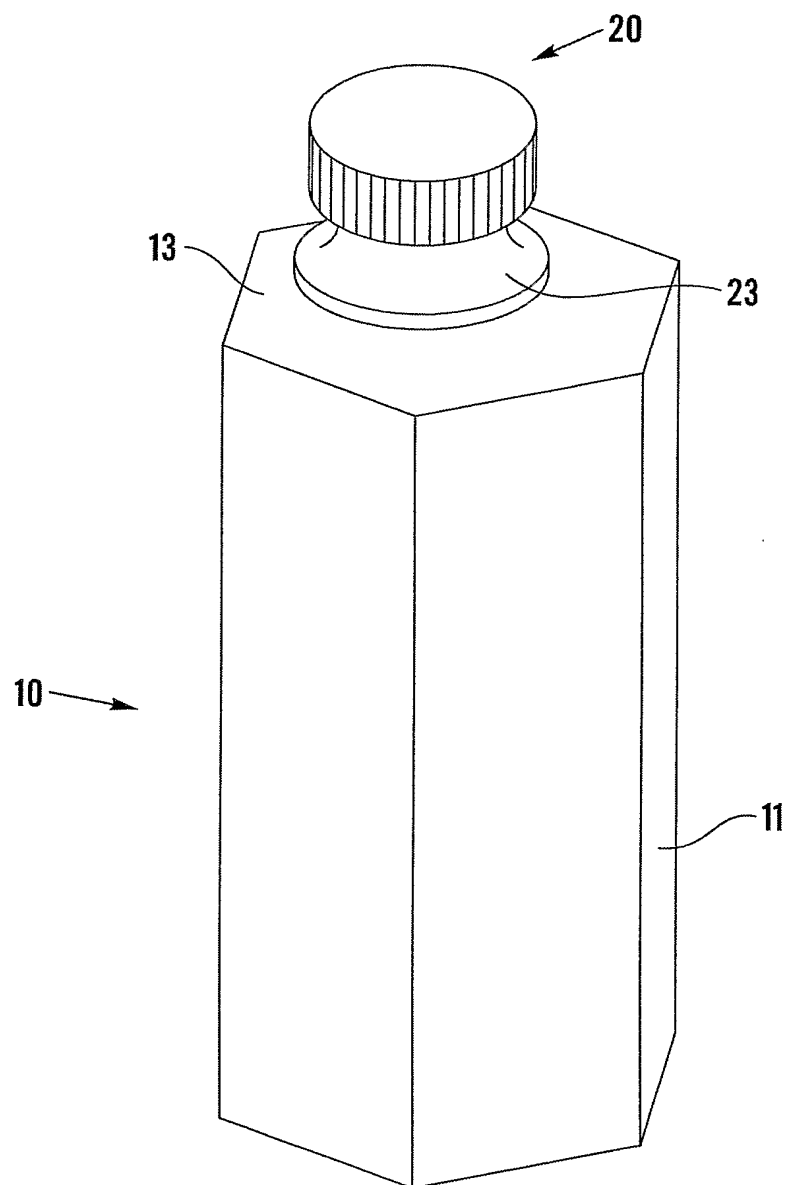


Fig. 13

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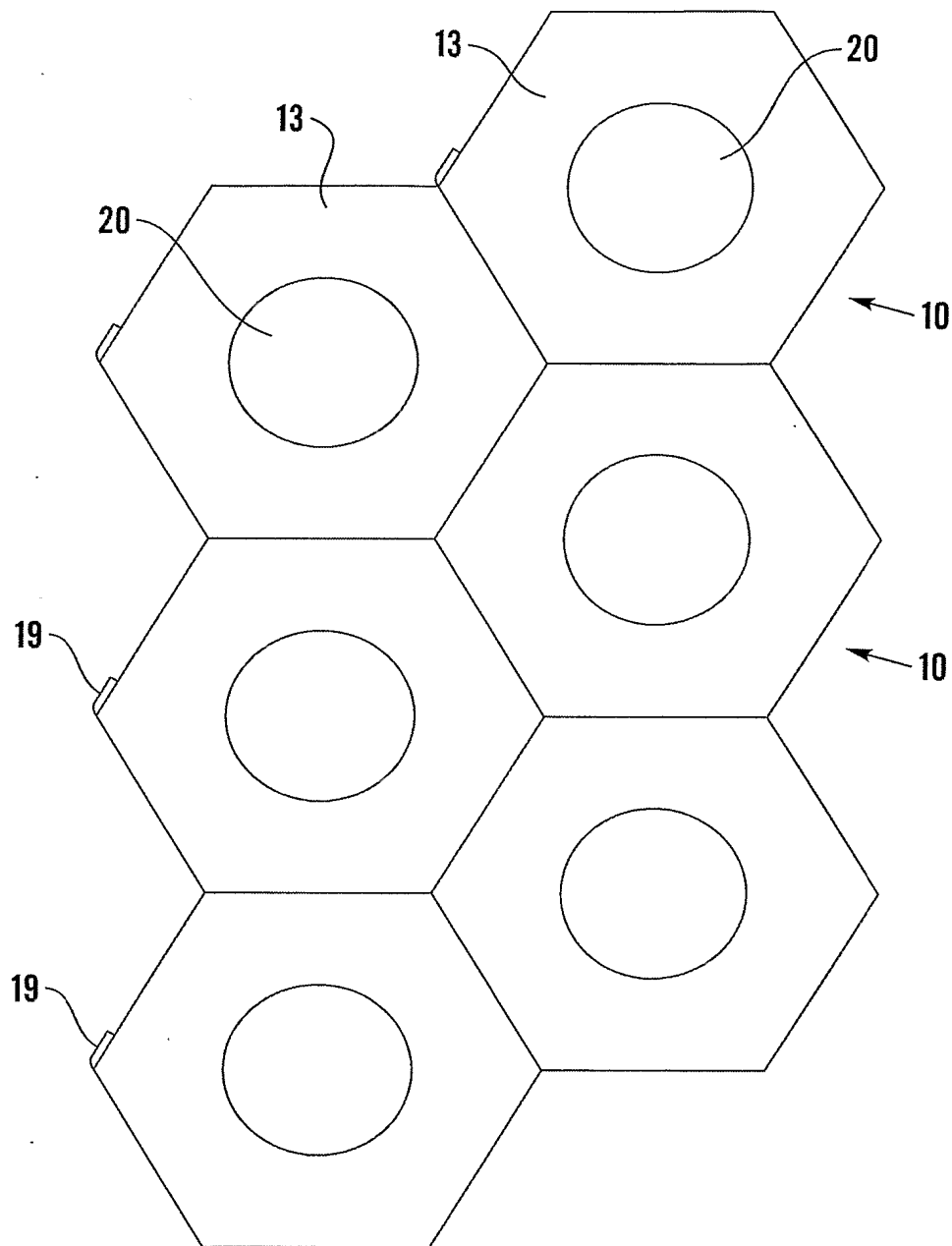


Fig. 14

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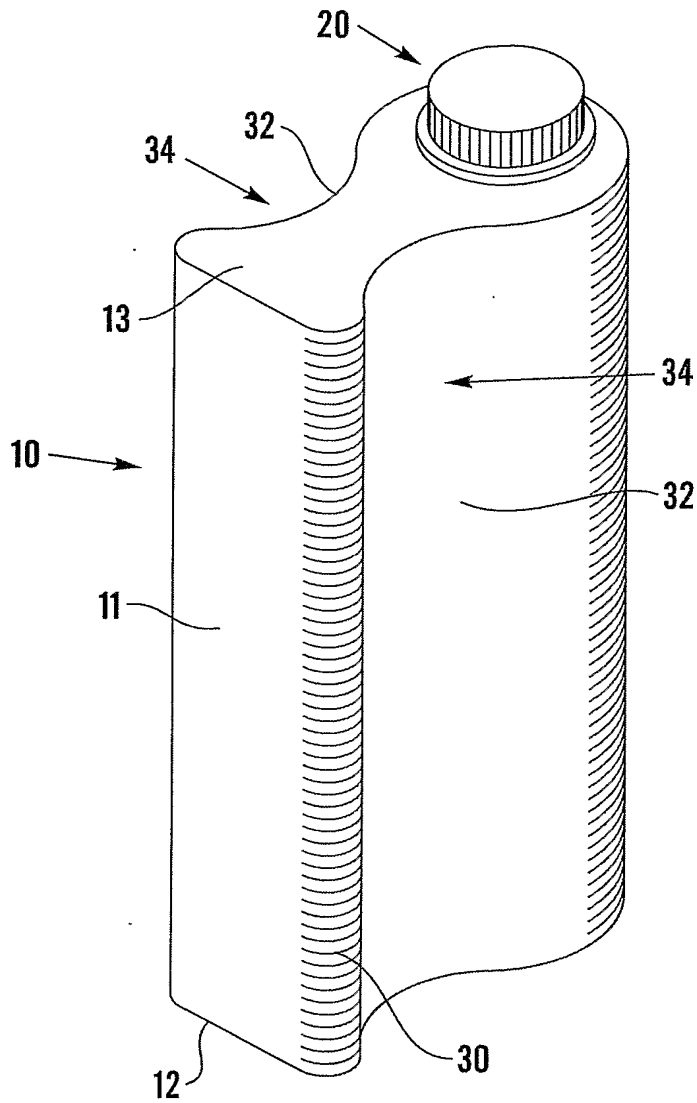


Fig. 15

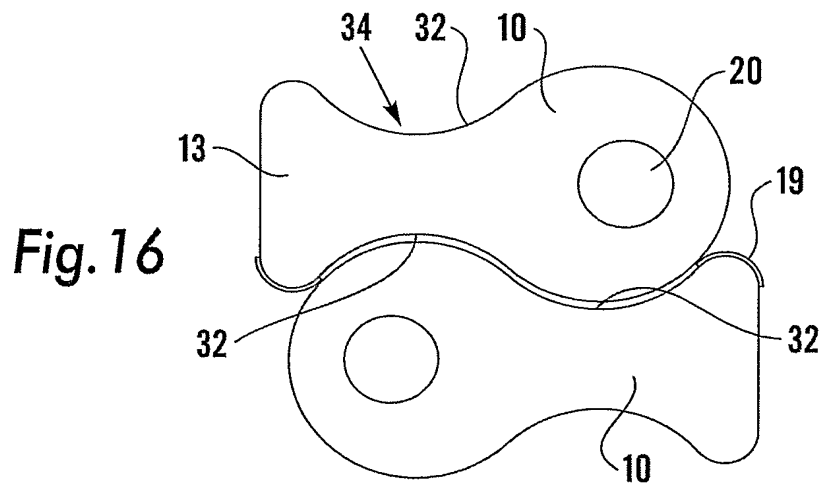


Fig. 16

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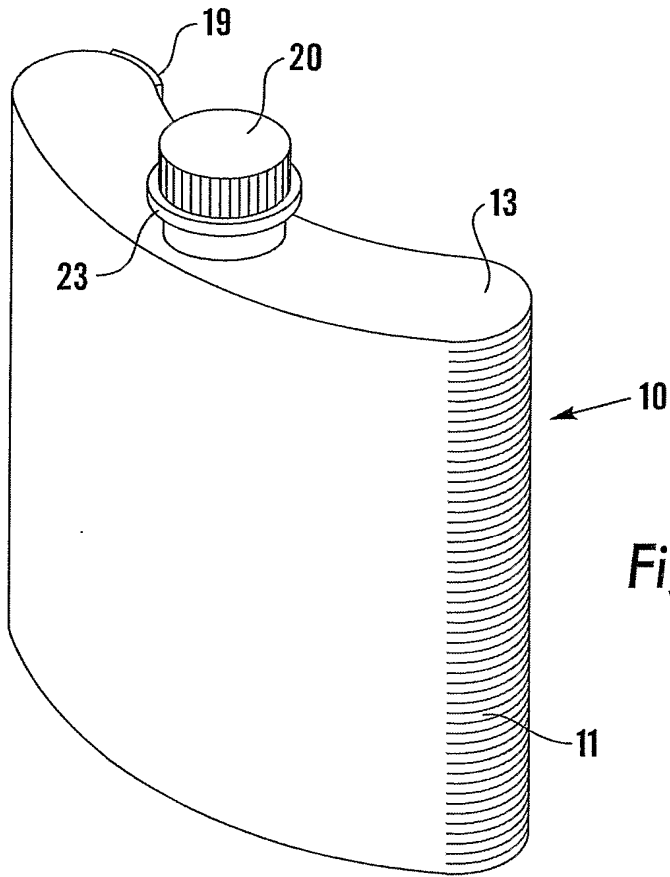


Fig. 17

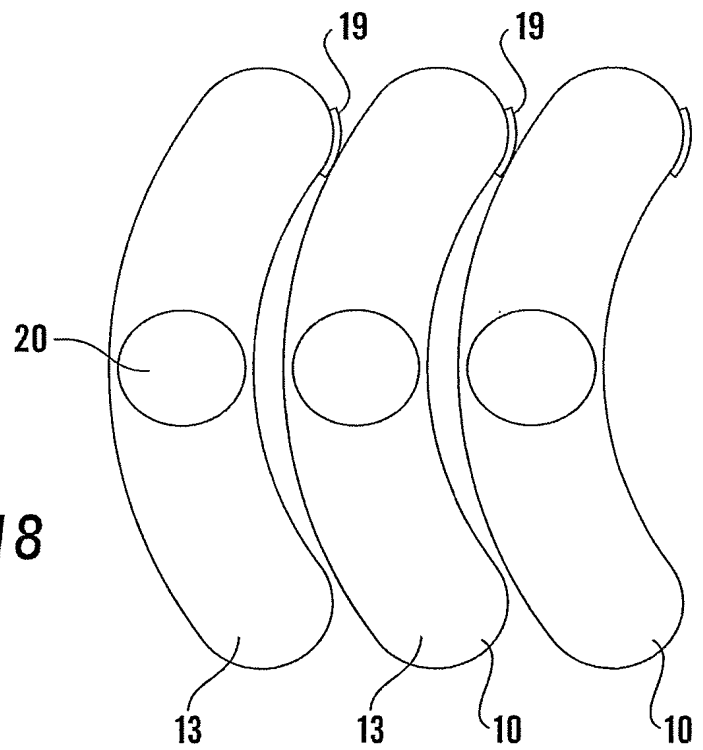


Fig. 18

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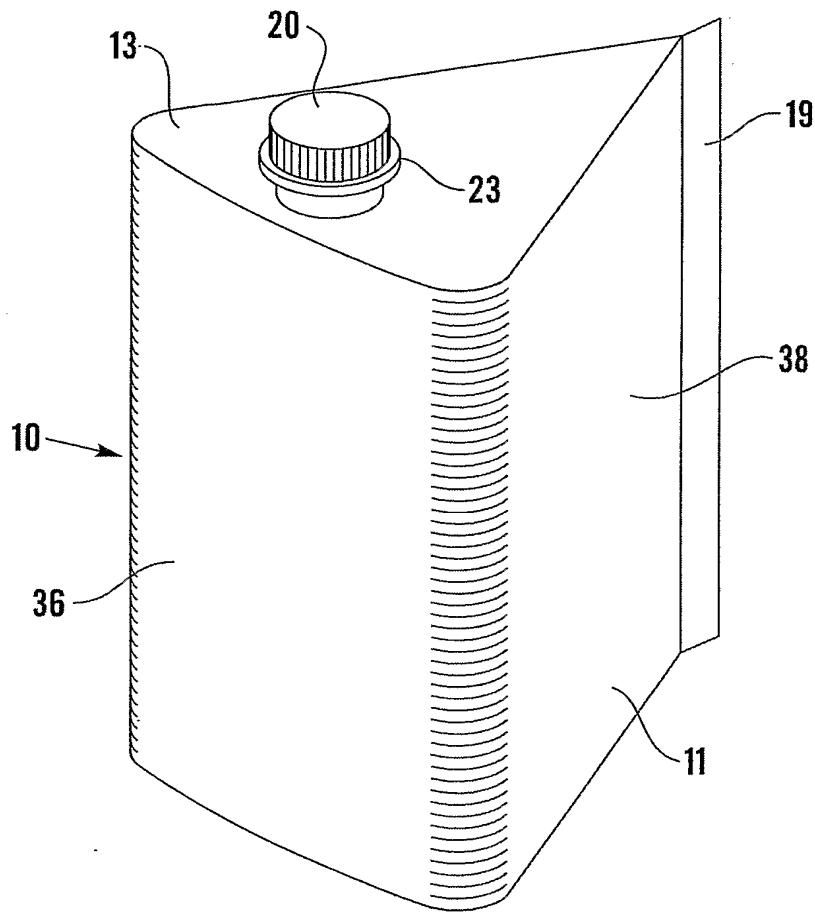


Fig. 19

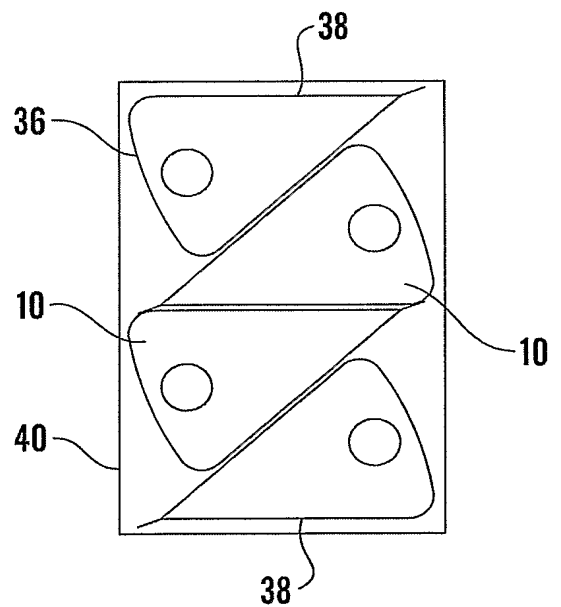


Fig. 20

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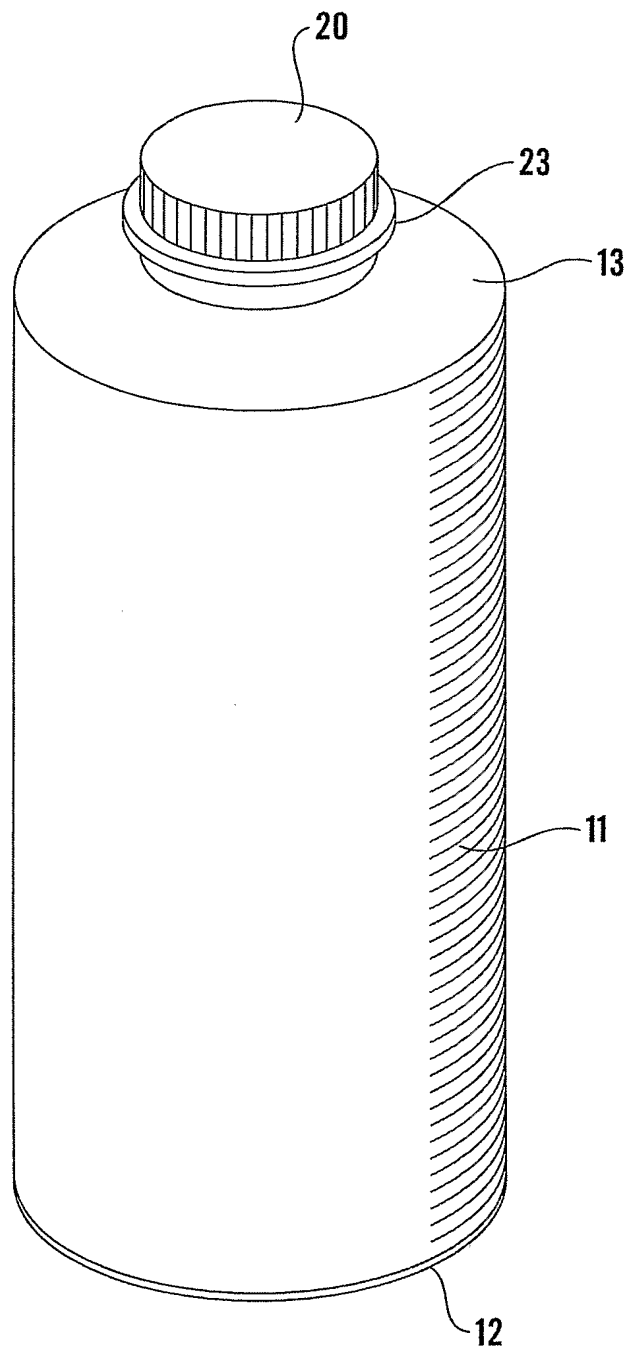


Fig.21

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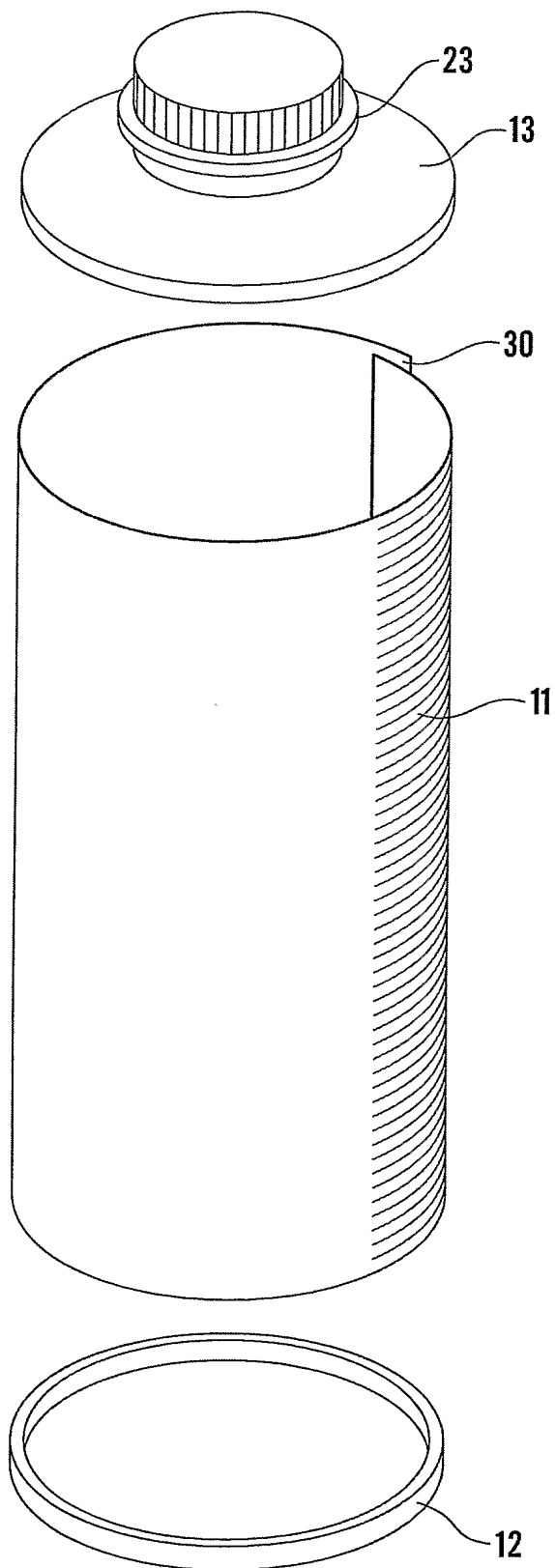
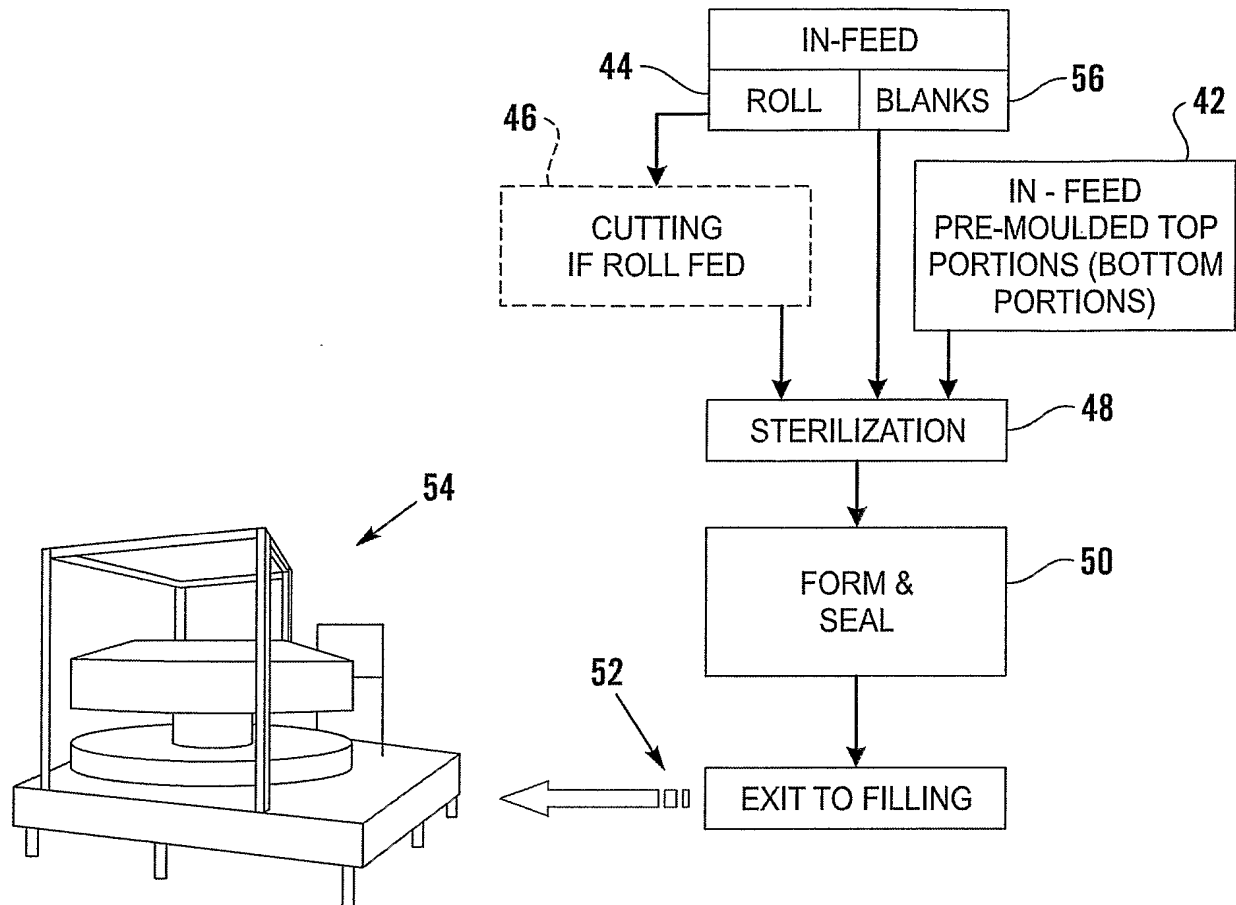
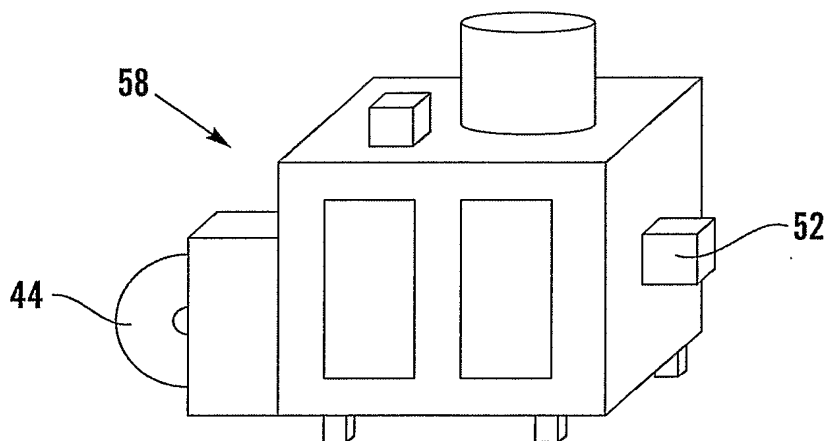


Fig.22

**16/19****Fig.23****Fig.24**

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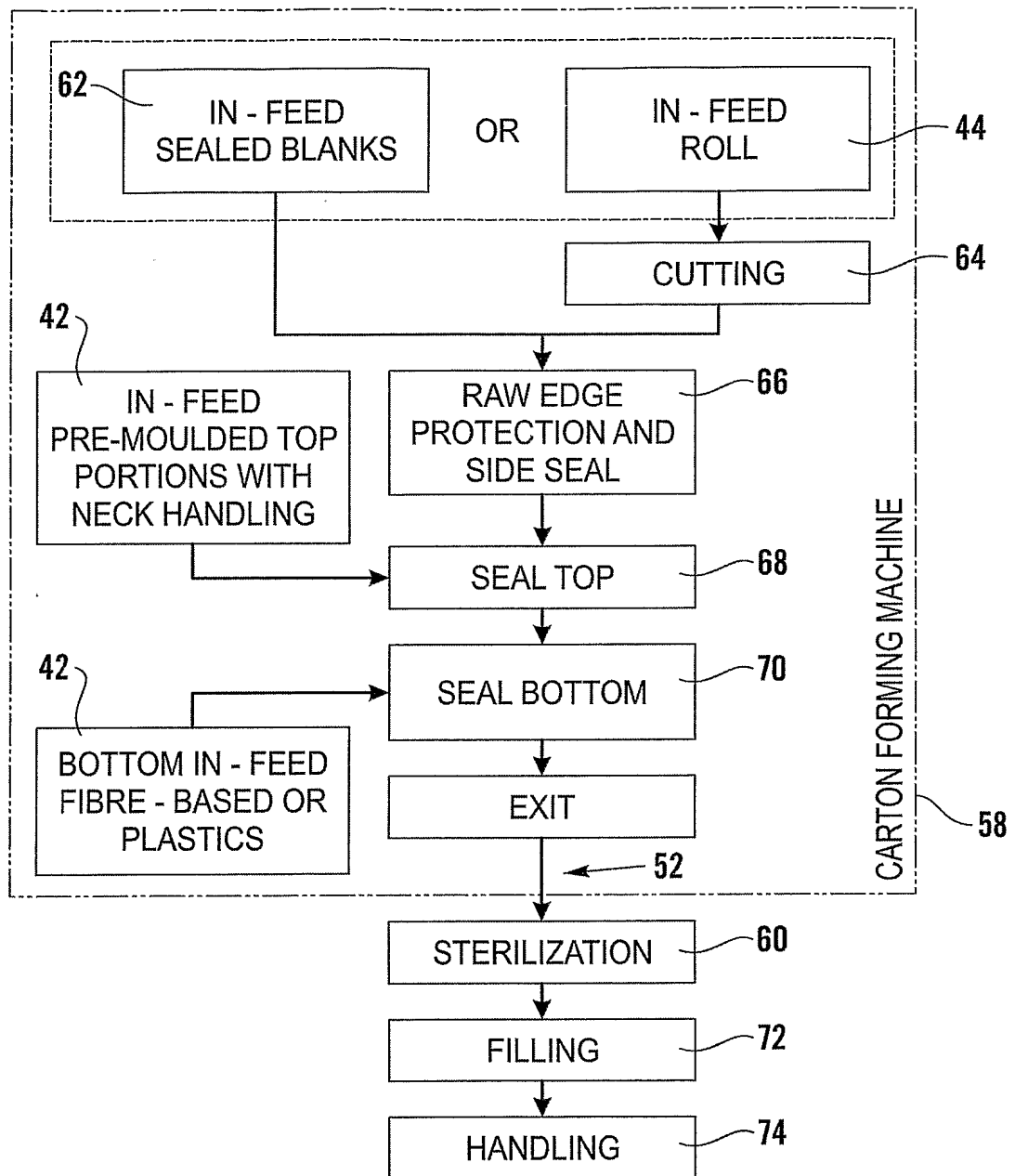
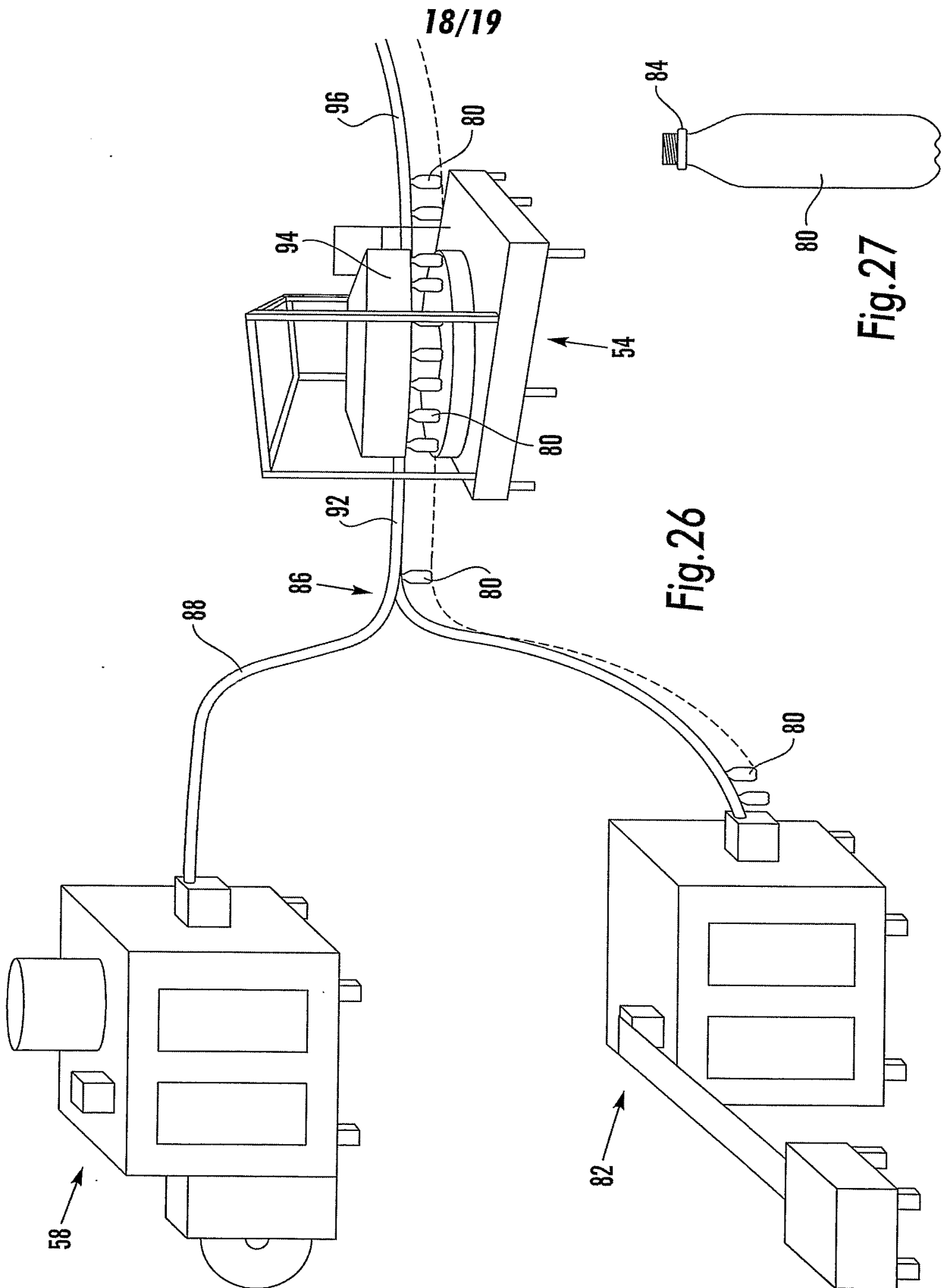


Fig.25



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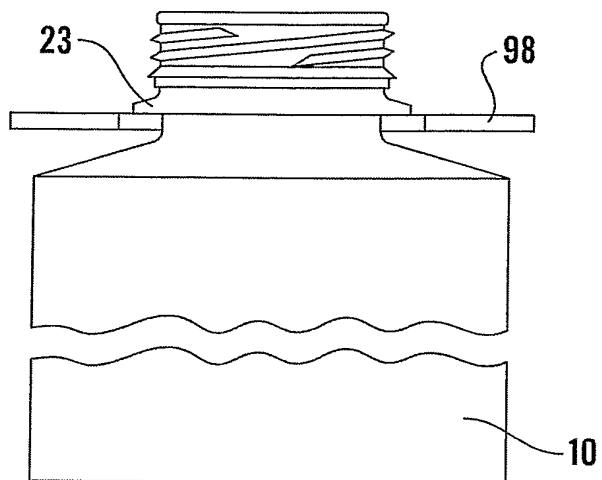


Fig.28

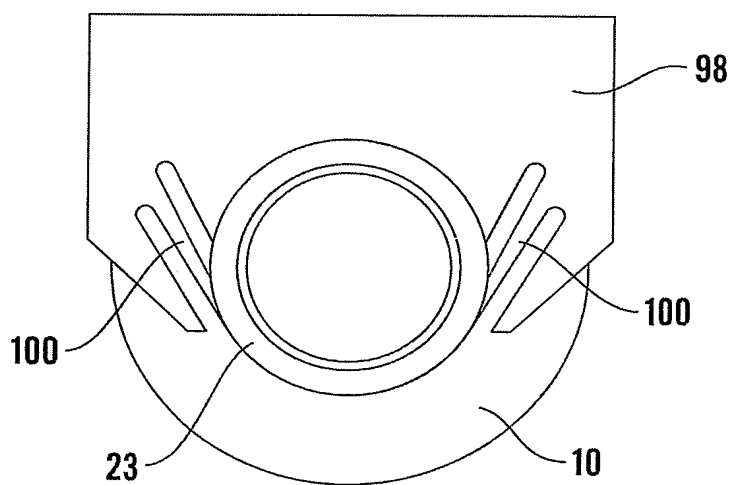


Fig.29